

SEQUENCE LISTING

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<110> HENNIG, MICHAEL
      LOEFFLER, BERND MICHAEL
      THOMA, RALPH
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<213> Homo sapiens

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Ile Ser Asp His Glu Tyr Leu Tyr Lys Gln Glu Asn Asn Ile Leu Val
35 40 45

Phe Asn Ala Glu Tyr Gly Asn Ser Ser Val Phe Leu Glu Asn Ser Thr 50 55 60

Phe Asp Glu Phe Gly His Ser Ile Asn Asp Tyr Ser Ile Ser Pro Asp 65 70 75 80

Gly Gln Phe Ile Leu Leu Glu Tyr Asn Tyr Val Lys Gln Trp Arg His
85 90 95

Ser Tyr Thr Ala Ser Tyr Asp Ile Tyr Asp Leu Asn Lys Arg Gln Leu 100 105 110

Ile Thr Glu Glu Arg Ile Pro Asn Asn Thr Gln Trp Val Thr Trp Ser

Pro Val Gly His Lys Leu Ala Tyr Val Trp Asn Asn Asp Ile Tyr Val 130 135 140

Lys Ile Glu Pro Asn Leu Pro Ser Tyr Arg Ile Thr Trp Thr Gly Lys 145 150 155 160

Glu Asp Ile Ile Tyr Asn Gly Ile Thr Asp Trp Val Tyr Glu Glu Glu 165 170 175

Val Phe Ser Ala Tyr Ser Ala Leu Trp Trp Ser Pro Asn Gly Thr Phe 180 185 190

Leu Ala Tyr Ala Gln Phe Asn Asp Thr Glu Val Pro Leu Ile Glu Tyr 195 200 205

Ser Phe Tyr Ser Asp Glu Ser Leu Gln Tyr Pro Lys Thr Val Arg Val 210 215 220

Pro Tyr Pro Lys Ala Gly Ala Val Asn Pro Thr Val Lys Phe Phe Val 230 Val Asn Thr Asp Ser Leu Ser Ser Val Thr Asn Ala Thr Ser Ile Gln 250 Ile Thr Ala Pro Ala Ser Met Leu Ile Gly Asp His Tyr Leu Cys Asp Val Thr Trp Ala Thr Gln Glu Arg Ile Ser Leu Gln Trp Leu Arg Arg 280 Ile Gln Asn Tyr Ser Val Met Asp Ile Cys Asp Tyr Asp Glu Ser Ser Gly Arg Trp Asn Cys Leu Val Ala Arg Gln His Ile Glu Met Ser Thr 310 315 Thr Gly Trp Val Gly Arg Phe Arg Pro Ser Glu Pro His Phe Thr Leu Asp Gly Asn Ser Phe Tyr Lys Ile Ile Ser Asn Glu Glu Gly Tyr Arg His Ile Cys Tyr Phe Gln Ile Asp Lys Lys Asp Cys Thr Phe Ile Thr 360 Lys Gly Thr Trp Glu Val Ile Gly Ile Glu Ala Leu Thr Ser Asp Tyr Leu Tyr Tyr Ile Ser Asn Glu Tyr Lys Gly Met Pro Gly Gly Arg Asn 390 Leu Tyr Lys Ile Gln Leu Ser Asp Tyr Thr Lys Val Thr Cys Leu Ser Cys Glu Leu Asn Pro Glu Arg Cys Gln Tyr Tyr Ser Val Ser Phe Ser 420 425 Lys Glu Ala Lys Tyr Tyr Gln Leu Arg Cys Ser Gly Pro Gly Leu Pro Leu Tyr Thr Leu His Ser Ser Val Asn Asp Lys Gly Leu Arg Val Leu 450 Glu Asp Asn Ser Ala Leu Asp Lys Met Leu Gln Asn Val Gln Met Pro Ser Lys Lys Leu Asp Phe Ile Ile Leu Asn Glu Thr Lys Phe Trp Tyr Gln Met Ile Leu Pro Pro His Phe Asp Lys Ser Lys Lys Tyr Pro Leu 505 Leu Leu Asp Val Tyr Ala Gly Pro Cys Ser Gln Lys Ala Asp Thr Val

520

515

Phe Arg Leu Asn Trp Ala Thr Tyr Leu Ala Ser Thr Glu Asn Ile Ile 530 540

Val Ala Ser Phe Asp Gly Arg Gly Ser Gly Tyr Gln Gly Asp Lys Ile 545 550 555 560

Met His Ala Ile Asn Arg Arg Leu Gly Thr Phe Glu Val Glu Asp Gln 565 570 575

Ile Glu Ala Ala Arg Gln Phe Ser Lys Met Gly Phe Val Asp Asn Lys $580 \ \cdot \ 590$

Arg Ile Ala Ile Trp Gly Trp Ser Tyr Gly Gly Tyr Val Thr Ser Met 595 600 605

Val Leu Gly Ser Gly Ser Gly Val Phe Lys Cys Gly Ile Ala Val Ala 610 620

Pro Val Ser Arg Trp Glu Tyr Tyr Asp Ser Val Tyr Thr Glu Arg Tyr 625 630 635 640

Met Gly Leu Pro Thr Pro Glu Asp Asn Leu Asp His Tyr Arg Asn Ser 645 650 655

Thr Val Met Ser Arg Ala Glu Asn Phe Lys Gln Val Glu Tyr Leu Leu 660 665 670

Ile His Gly Thr Ala Asp Asp Asn Val His Phe Gln Gln Ser Ala Gln 675 680 685

Ile Ser Lys Ala Leu Val Asp Val Gly Val Asp Phe Gln Ala Met Trp 690 695 700

Tyr Thr Asp Glu Asp His Gly Ile Ala Ser Ser Thr Ala His Gln His 705 710 715 720

Ile Tyr Thr His Met Ser His Phe Ile Lys Gln Cys Phe Ser Leu Pro 725 730 735

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20 25 30

Asp Ala Thr Ala Asp Ser Arg Lys Thr Tyr Thr Leu Thr Asp Tyr Leu 35 40 45

Lys Asn Thr Tyr Arg Leu Lys Leu Tyr Ser Leu Arg Trp Ile Ser Asp 50 55 60

His Glu Tyr Leu Tyr Lys Gln Glu Asn Asn Ile Leu Val Phe Asn Ala 65 70 75 80

Glu Tyr Gly Asn Ser Ser Val Phe Leu Glu Asn Ser Thr Phe Asp Glu 85 90 95

Phe Gly His Ser Ile Asn Asp Tyr Ser Ile Ser Pro Asp Gly Gln Phe 100 105 110

Ile Leu Leu Glu Tyr Asn Tyr Val Lys Gln Trp Arg His Ser Tyr Thr 115 120 125

Ala Ser Tyr Asp Ile Tyr Asp Leu Asn Lys Arg Gln Leu Ile Thr Glu 130 135 140

Glu Arg Ile Pro Asn Asn Thr Gln Trp Val Thr Trp Ser Pro Val Gly
145 150 155 160

His Lys Leu Ala Tyr Val Trp Asn Asn Asp Ile Tyr Val Lys Ile Glu 165 170 175

Pro Asn Leu Pro Ser Tyr Arg Ile Thr Trp Thr Gly Lys Glu Asp Ile 180 185 190

Ile Tyr Asn Gly Ile Thr Asp Trp Val Tyr Glu Glu Glu Val Phe Ser 195 200 205

Ala Tyr Ser Ala Leu Trp Trp Ser Pro Asn Gly Thr Phe Leu Ala Tyr 210 215 220

Ala Gln Phe Asn Asp Thr Glu Val Pro Leu Ile Glu Tyr Ser Phe Tyr 225 230 235 240

Ser Asp Glu Ser Leu Gln Tyr Pro Lys Thr Val Arg Val Pro Tyr Pro 245 250 255

Lys Ala Gly Ala Val Asn Pro Thr Val Lys Phe Phe Val Val Asn Thr 260 265 270

Asp Ser Leu Ser Ser Val Thr Asn Ala Thr Ser Ile Gln Ile Thr Ala 275 280 285

Pro Ala Ser Met Leu Ile Gly Asp His Tyr Leu Cys Asp Val Thr Trp 290 295 300

Ala Thr Gln Glu Arg Ile Ser Leu Gln Trp Leu Arg Arg Ile Gln Asn 305 310 315 320

Tyr Ser Val Met Asp Ile Cys Asp Tyr Asp Glu Ser Ser Gly Arg Trp
325 330 335

Asn Cys Leu Val Ala Arg Gln His Ile Glu Met Ser Thr Thr Gly Trp 340 345 350

Ser Phe Tyr Lys Ile Ile Ser Asn Glu Glu Gly Tyr Arg His Ile Cys 375 Tyr Phe Gln Ile Asp Lys Lys Asp Cys Thr Phe Ile Thr Lys Gly Thr Trp Glu Val Ile Gly Ile Glu Ala Leu Thr Ser Asp Tyr Leu Tyr Tyr Ile Ser Asn Glu Tyr Lys Gly Met Pro Gly Gly Arg Asn Leu Tyr Lys Ile Gln Leu Ser Asp Tyr Thr Lys Val Thr Cys Leu Ser Cys Glu Leu 440 Asn Pro Glu Arg Cys Gln Tyr Tyr Ser Val Ser Phe Ser Lys Glu Ala Lys Tyr Tyr Gln Leu Arg Cys Ser Gly Pro Gly Leu Pro Leu Tyr Thr Leu His Ser Ser Val Asn Asp Lys Gly Leu Arg Val Leu Glu Asp Asn 485 490 Ser Ala Leu Asp Lys Met Leu Gln Asn Val Gln Met Pro Ser Lys Lys Leu Asp Phe Ile Ile Leu Asn Glu Thr Lys Phe Trp Tyr Gln Met Ile 520 Leu Pro Pro His Phe Asp Lys Ser Lys Lys Tyr Pro Leu Leu Leu Asp

Val Gly Arg Phe Arg Pro Ser Glu Pro His Phe Thr Leu Asp Gly Asn 355 360 365

Val Tyr Ala Gly Pro Cys Ser Gln Lys Ala Asp Thr Val Phe Arg Leu 545 550 560

535

Asn Trp Ala Thr Tyr Leu Ala Ser Thr Glu Asn Ile Ile Val Ala Ser 565 570 575

Phe Asp Gly Arg Gly Ser Gly Tyr Gln Gly Asp Lys Ile Met His Ala 580 585 590

Ile Asn Arg Arg Leu Gly Thr Phe Glu Val Glu Asp Gln Ile Glu Ala 595 600 605

Ala Arg Gln Phe Ser Lys Met Gly Phe Val Asp Asn Lys Arg Ile Ala 610 615 620

Ile Trp Gly Trp Ser Tyr Gly Gly Tyr Val Thr Ser Met Val Leu Gly 625 630 635

Ser Gly Ser Gly Val Phe Lys Cys Gly Ile Ala Val Ala Pro Val Ser 645 650 655

Arg Trp Glu Tyr Tyr Asp Ser Val Tyr Thr Glu Arg Tyr Met Gly Leu 660 665 670

Pro Thr Pro Glu Asp Asn Leu Asp His Tyr Arg Asn Ser Thr Val Met 675 680 685

Ser Arg Ala Glu Asn Phe Lys Gln Val Glu Tyr Leu Leu Ile His Gly 690 695 700

Thr Ala Asp Asp Asn Val His Phe Gln Gln Ser Ala Gln Ile Ser Lys 705 710 715 720

Ala Leu Val Asp Val Gly Val Asp Phe Gln Ala Met Trp Tyr Thr Asp 725 730 735

Glu Asp His Gly Ile Ala Ser Ser Thr Ala His Gln His Ile Tyr Thr 740 745 750

His Met Ser His Phe Ile Lys Gln Cys Phe Ser Leu Pro
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Ala Ala Asp Ser Ala Arg Thr Tyr Thr Leu Ala Asp Tyr Leu Lys
35 40 45

Asn Thr Phe Arg Val Lys Ser Tyr Ser Leu Arg Trp Val Ser Asp Ser 50 55 60

Glu Tyr Leu Tyr Lys Gln Glu Asn Asn Ile Leu Leu Phe Asn Ala Glu 65 70 75 80

His Gly Asn Ser Ser Ile Phe Leu Glu Asn Ser Thr Phe Glu Ile Phe 85 90 95

Gly Asp Ser Ile Ser Asp Tyr Ser Val Ser Pro Asp Arg Leu Phe Val

Leu Leu Glu Tyr Asn Tyr Val Lys Gln Trp Arg His Ser Tyr Thr Ala 115 120 125

Ser Tyr Ser Ile Tyr Asp Leu Asn Lys Arg Gln Leu Ile Thr Glu Glu 130 . 135 140

Lys Ile Pro Asn Asn Thr Gln Trp Ile Thr Trp Ser Gln Glu Gly His

Lys Leu Ala Tyr Val Trp Lys Asn Asp Ile Tyr Val Lys Ile Glu Pro His Leu Pro Ser His Arg Ile Thr Ser Thr Gly Lys Glu Asn Val Ile 180 185 Phe Asn Gly Ile Asn Asp Trp Val Tyr Glu Glu Glu Ile Phe Gly Ala 200 Tyr Ser Ala Leu Trp Trp Ser Pro Asn Gly Thr Phe Leu Ala Tyr Ala Gln Phe Asn Asp Thr Gly Val Pro Leu Ile Glu Tyr Ser Phe Tyr Ser Asp Glu Ser Leu Gln Tyr Pro Lys Thr Val Trp Ile Pro Tyr Pro Lys 250 Ala Gly Ala Val Asn Pro Thr Val Lys Phe Phe Val Val Asn Thr Asp Ser Leu Ser Ser Thr Thr Thr Thr Ile Pro Met Gln Ile Thr Ala Pro Ala Ser Val Thr Thr Gly Asp His Tyr Leu Cys Asp Val Ala Trp Val 295 Ser Glu Asp Arg Ile Ser Leu Gln Trp Leu Arg Arg Ile Gln Asn Tyr Ser Val Met Ala Ile Cys Asp Tyr Asp Lys Thr Thr Leu Val Trp Asn Cys Pro Thr Thr Gln Glu His Ile Glu Thr Ser Ala Thr Gly Trp Cys Gly Arg Phe Arg Pro Ala Glu Pro His Phe Thr Ser Asp Gly Ser Ser Phe Tyr Lys Ile Val Ser Asp Lys Asp Gly Tyr Lys His Ile Cys Gln Phe Gln Lys Asp Arg Lys Pro Glu Gln Val Cys Thr Phe Ile Thr Lys 390 Gly Ala Trp Glu Val Ile Ser Ile Glu Ala Leu Thr Ser Asp Tyr Leu 405 410 Tyr Tyr Ile Ser Asn Glu Tyr Lys Glu Met Pro Gly Gly Arg Asn Leu

Tyr Lys Ile Gln Leu Thr Asp His Thr Asn Lys Lys Cys Leu Ser Cys

440

435

Asp Leu Asn Pro Glu Arg Cys Gln Tyr Tyr Ser Val Ser Leu Ser Lys 450 455 460

Glu Ala Lys Tyr Tyr Gln Leu Gly Cys Arg Gly Pro Gly Leu Pro Leu 465 470 475 480

Tyr Thr Leu His Arg Ser Thr Asp Gln Lys Glu Leu Arg Val Leu Glu 485 490 495

Asp Asn Ser Ala Leu Asp Lys Met Leu Gln Asp Val Gln Met Pro Ser 500 505 510

Lys Lys Leu Asp Phe Ile Val Leu Asn Glu Thr Arg Phe Trp Tyr Gln 515 520 525

Met Ile Leu Pro Pro His Phe Asp Lys Ser Lys Lys Tyr Pro Leu Leu 530 540

Ile Asp Val Tyr Ala Gly Pro Cys Ser Gln Lys Ala Asp Ala Ala Phe 545 550 560

Arg Leu Asn Trp Ala Thr Tyr Leu Ala Ser Thr Glu Asn Ile Ile Val 565 570 575

Ala Ser Phe Asp Gly Arg Gly Ser Gly Tyr Gln Gly Asp Lys Ile Met 580 585 590

His Ala Ile Asn Lys Arg Leu Gly Thr Leu Glu Val Glu Asp Gln Ile 595 600 605

Glu Ala Ala Arg Gln Phe Leu Lys Met Gly Phe Val Asp Ser Lys Arg 610 620

Val Ala Ile Trp Gly Trp Ser Tyr Gly Gly Tyr Val Thr Ser Met Val 625 630 635 640

Leu Gly Ser Gly Ser Gly Val Phe Lys Cys Gly Ile Ala Val Ala Pro 645 650 655

Val Ser Arg Trp Glu Tyr Tyr Asp Ser Val Tyr Thr Glu Arg Tyr Met 660 665 670

Gly Leu Pro Thr Pro Glu Asp Asn Leu Asp His Tyr Arg Asn Ser Thr 675 680 685

Val Met Ser Arg Ala Glu Asn Phe Lys Gln Val Glu Tyr Leu Leu Ile 690 695 700

His Gly Thr Ala Asp Asp Asn Val His Phe Gln Gln Ser Ala Gln Ile 705 710 715 720

Ser Lys Ala Leu Val Asp Ala Gly Val Asp Phe Gln Ala Met Trp Tyr 725 730 735

Thr Asp Glu Asp His Gly Ile Ala Ser Ser Thr Ala His Gln His Ile 740 745 750

Tyr Ser His Met Ser His Phe Leu Gln Gln Cys Phe Ser Leu Arg
755 760 765

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<211> 283

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Ile Lys Leu Asp Gly Ser His Pro Ala Phe Leu Tyr Gly Tyr Gly Gly
35 40 45

Phe Asn Ile Ser Ile Thr Pro Asn Tyr Ser Val Ser Arg Leu Ile Phe
50 55 60

Val Arg His Met Gly Gly Val Leu Ala Val Ala Asn Ile Arg Gly Gly 65 70 75 80

Gly Glu Tyr Gly Glu Thr Trp His Lys Gly Gly Ile Leu Ala Asn Lys 85 90 95

Gln Asn Cys Phe Asp Asp Phe Gln Cys Ala Ala Glu Tyr Leu Ile Lys 100 105 110

Glu Gly Tyr Thr Ser Pro Lys Arg Leu Thr Ile Asn Gly Gly Ser Asn 115 120 125

Gly Gly Leu Leu Val Ala Thr Cys Ala Asn Gln Arg Pro Asp Leu Phe 130 135 140

Gly Cys Val Ile Ala Gln Val Gly Val Met Asp Met Leu Lys Phe His 145 150 155 160

Lys Tyr Thr Ile Gly His Ala Trp Thr Thr Asp Tyr Gly Cys Ser Asp 165 170 175

Ser Lys Gln His Phe Glu Trp Leu Ile Lys Tyr Ser Pro Leu His Asn 180 185 190

Val Lys Leu Pro Glu Ala Asp Asp Ile Gln Tyr Pro Ser Met Leu Leu 195 200 205

Leu Thr Ala Asp His Asp Asp Arg Val Val Pro Leu His Ser Leu Lys 210 215 220

Phe Ile Ala Thr Leu Gln Tyr Ile Val Gly Arg Ser Arg Lys Gln Asn 225 230 235 240

Asn Pro Leu Leu Ile His Val Asp Thr Lys Ala Gly His Gly Ala Gly 245 250 255

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                5
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Glu Ser Ser Gly Arg
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